

HSMS: FULL "CRADLE TO GRAVE" IMPLEMENTATION AT  
SPAWAR SYSTEMS CENTER - SAN DIEGO

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Background

The Hazardous Substance Management System (HSMS) is an automated system for "cradle to grave" tracking and managing of hazardous material (HM) and hazardous waste (HW). It was created as a tool to implement the Consolidated Hazardous Material Reutilization and Inventory Management Program (CHRIMP). CHRIMP is a philosophy that establishes an environment for controlling, tracking and reducing the variety and quantity of HM in use at military facilities. In May 1995, the Chief of Naval Operations (CNO) mandated Navy-wide implementation of CHRIMP and directed Navy-wide implementation of HSMS at shore facilities.

HSMS evolved from the Portsmouth Naval Shipyard Hazardous Material Control and Management (HMC&M) System. HMC&M was selected as the Department of Defense migration system for hazardous material. Defense Environmental Security Corporate Information Management (DESCIM) selected HMC&M because it was an integrated system which supported pollution prevention, EPCRA and environmental reporting requirements by tracking HM through its lifecycle.

Implementation of HSMS

The Space and Naval Warfare Systems Center, San Diego (SSC-SD) is a research and development facility whose mission spans a variety of technologies. SSC-SD became involved in HSMS prior to the implementation of the San Diego region. In 1995, an HSMS Implementation Team was organized with members from the Safety and Environmental Office, Supply and all technical departments at SSC-SD that use HM. In April 1997, SSC-SD became an HSMS beta test site and was the first facility in the San Diego region to use HSMS.

One of the basic decisions required before implementation could begin was selection of the method for issue of HM. At some facilities, users of HSMS utilize the "Tool Crib Concept." Using this method, any HM issued during the work shift is returned to the central HM storage area at the end of the shift. In a research and development environment such as SSC-SD, this method would not work. SSC-SD decided to use a method called the "Library Concept." It is so named because it functions in much the same way as a library does. It is similar to the Air Force "Pharmacy Concept." When someone needs HM, they come to the HM Minimization Center (HMC) to "check out" the item. This HM is reserved in their name and is theirs to keep as long as they need it. When they are finished with the HM, whether it is at the end of the day or next

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year, they return it to the HMC. Care is taken to issue only the amount of HM that is needed for the job in reasonably-sized containers. For instance, if someone will use 30 gallons of a solvent during a one-year project, the unit of issue may be one gallon at a time. The storage of the remaining HM is handled by the HMC.

Another decision to be made was how many codes (divisions or branches) to implement in the beginning. SSC-SD decided to introduce only three codes into HSMS for the initial implementation. These three codes were representative of the variety of processes at SSC-SD ranging from research to industrial. One code in the first group implemented into HSMS was the Test Engineering and Restoration Division. This group consists of about 150 people including both civilian and contractor personnel. The types of operations performed in this division are not as oriented to research and development as some other divisions at SSC-SD. These operations include electronic equipment repair, refurbishment and testing, abrasive blasting using glass beads, metal surface preparation with phosphoric and chromic acid solutions, painting, and general cleaning.

The start-up process involved establishing administrative and reference module data bases as well as instituting process algorithms for all operations that use HM. With the assistance of John J. McMullen and Associates (JJMA), the Naval Supply Systems Center contractor supporting HSMS, the HM in the initial codes was inventoried and barcoded. Once JJMA completed these tasks for the Test Engineering and Restoration Division, issuance of HM began using the "Library Concept."

#### Procedure for Disposition of Hazardous Material as Waste

When HM is returned to the HMC, a determination is made identifying the item as reusable or as waste. When a reusable HM is returned, it is entered back into the inventory of the HMC by a "returned" disposition. For all HM which has become HW (including any unusable, spent or contaminated HM), the proper "disposed" disposition is performed.

Prior to disposing of an HM as an HW in the HSMS Materials Module, links need to be established between the HM, the site-specific process for which it is used, and the waste stream for the generated HW. A guidance document for this was developed in-house. This document (titled "HSMS Waste Module Procedures") makes the process of linking much simpler and ensures that when a HW is created from an HM disposition in the Materials Module, errors which would result from incorrect or incomplete links do not interrupt the disposition process.

In the "HSMS Waste Module Procedures", the first step in disposing of an HM as an HW is to obtain information from the barcode attached to the HM. A worksheet was created to ensure that the necessary information is retained for future use. The key pieces of information recorded on the worksheet are the Specific Task ID Number, the person the HM was issued to, the Serial Number of the container, the name of the item, the MSDS number, the NSN, the location or shop to which it was issued, and the percentage of the HM issued which is now being disposed as HW. The MSDS Number is then used to locate the chemical constituent information for the item. The CAS number for at least one of the chemical constituents is written down on the

worksheet. Next, an HW container is created in HSMS. This is accomplished through the Waste Module by clicking on "Container Inventory", performing an "Insert", and entering the relevant information (container ID, type of container, size of container, unit/measure, and location of the container).

A waste stream must be developed to describe the waste. The two-character Naval Facilities Engineering Service Center (NFESC) waste code is used to designate the Waste Stream Category Code. When the waste stream constituent information window opens, at least one of the CAS numbers for the HM is entered to provide a link between the HM and the waste stream. Next, the Waste Profile is created. Every waste stream that relates to the specific waste profile is entered. Additionally, the waste profile constituents must be inserted. At least one of the CAS numbers from each waste stream must be entered. Each time a new waste stream is created, the appropriate waste profile along with its constituent information must be updated. To close the loop, the Site Specific Process is accessed in the Pollution Module. After clicking on the Waste button for that specific process, the proper waste stream is selected. This links the waste stream to the site-specific process.

Finally, after all the necessary information and links are established, the disposition for the HM can be done in the Materials Module by selecting "Transactions" and then clicking on "Input Disposition of Materials." If there is any amount of the HM going to disposal, a window will open that requires entry of the waste stream and HW container number, both of which were established in the linking procedure mentioned previously.

#### Pilot Transfer of Hazardous Waste

At SSC-SD, all HW generated is accumulated using either satellite accumulation or less-than-90-day accumulation. SSC-SD does not have a permitted treatment, storage or disposal facility onsite. Most HW from SSC-SD is transferred to the Navy Public Works Center San Diego (PWC-SD). At the SSC-SD Old Town Campus, where the Test Engineering and Restoration Division is located, all HW must be transferred to PWC-SD or a contractor via an HW manifest. Recognizing that our HSMS HW disposal procedures would need to mesh with that of PWC-SD and in order to facilitate complete integration of HSMS from cradle to grave, SSC-SD advocated the formation of an HSMS HW Working Group for the Point Loma Naval Complex and the Old Town Campus. Group members included SSC-SD, PWC-SD and Naval Submarine Base San Diego which is also part of the Point Loma Naval Complex. After several meetings discussing integration, a pilot transfer of HW from SSC-SD to PWC-SD occurred to test the recommended changes.

The key issue to be addressed before the pilot transfer could occur was the necessary paperwork. PWC-SD requires their customers to provide a standardized HW Profile Sheet for each waste stream and a HW Turn-In Form that lists the waste streams along with information on the waste stream source and form. A simplified version of each of these forms, hereafter referred to as the HSMS Profile Sheet and the HSMS Turn-In Form, was produced using IQ (Intelligent Query) for Windows. Each HSMS Profile Sheet identifies the waste profile and waste stream name for a specific HW container. Also printed are the container size and the weight of actual HW in the

container calculated by HSMS. The final information on the HSMS Profile Sheet is a list of every chemical found in the container showing the chemical name, CAS number and the percentage of each chemical in the container. In calculating the weight and percentage, HSMS only takes into account the constituents of the HM transferred into the HW container and does not include other components of the final weight as it will appear on the manifest (such as the weight of the container, debris, etc.). The HSMS Turn-In Form lists the HSMS Container ID and the HW category with blank spaces beside each container so that, at the time of waste pickup, notations can be made for the total weight and whether the waste was bulk or non-bulk. At the bottom of the form are blanks for the activity representative and PWC-SD representative to sign and date.

To schedule the pilot transfer, SSC-SD faxed to PWC-SD the HSMS Profile Sheets for each HW container and the HSMS Turn-In Form. PWC-SD used the information from these forms to generate a HW manifest in advance. PWC-SD performs all manifest functions for activities in the San Diego region. The only spaces on the manifest that could not be completed in advance were the weights of the wastes and the signatures of the generator and transporter. Additionally, PWC-SD utilized the information from the forms to complete Land Disposal Restriction (LDR) forms and Department of Transportation (DOT) HW labels for transport. SSC-SD uses a HW label that is appropriate for use onsite but is not compliant for highway transport.

When the pilot transfer occurred, the PWC-SD representative weighed each container, noted those weights on the HSMS Turn-In Form and wrote bulk or non-bulk for each container (which determines the disposal cost rate). The Turn-In Form was completed by writing the manifest number on the form and having the activity representative and PWC-SD representative sign and date the form. The manifest was then completed by entering the waste weights and appropriate signatures. The DOT HW labels generated in advance were then affixed to each HW container.

In the past, the total time that PWC-SD needed to spend onsite to complete a HW pickup was around three hours. The reason for this lengthy time period was that the PWC-SD representative needed to do most of the work at the pickup site. After first perusing all the MSDSs for each waste in order to classify the wastes properly on the manifest, the representative would then complete the HW manifest and LDR forms, as well as the DOT HW labels for each HW container. By receiving the HW Profile Sheets and the HW Turn-In Form in advance, PWC-SD can do most of the work before their representative arrives onsite. The descriptive HSMS Profile Sheet makes it unnecessary for the generator to provide to PWC-SD a large stack of MSDSs. Almost all of the paperwork and labels can be written before leaving for the pickup. The PWC-SD representative was onsite at SSC-SD for only 25 minutes during the pilot transfer.

### Conclusions

As a beta test site, SSC-SD has successfully implemented HSMS to track HM and HW from cradle to grave. The method of HM issue chosen by SSC-SD is the "Library Concept" which allows personnel to "check out" a HM for an indefinite period of time, as long as the volume of HM requested is appropriate. Through cooperation with PWC-SD, SSC-SD has effectively demonstrated the smooth transition of hazardous waste from a generating activity to an off-site

treatment, storage and disposal facility by conducting a pilot transfer of HW. Both parties were satisfied with the paperwork utilized and the decrease in effort required to accomplish the pilot HW transfer. SSC-SD has continued to integrate more codes into HSMS. Transfers of HSMS HW to PWC-SD are now occurring regularly and have become standard procedure.

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